

Remarks

Claims 1-39 are pending. By this Amendment, claims 3, 6, 14, and 25 are cancelled, and claims 1-2, 4-5, 7-13, 15-17, 19-24, 26-28, 30-32, and 34 are amended. Upon entry of this Amendment, 35 claims will be pending. In particular, the following claims will be pending: 1-2, 4-5, 7-13, 15-24, and 26-39.

Applicants' representatives would like to thank Examiner Piziali for extending them the courtesy of an interview on 25 February 2003 to discuss this case.

In the Office Action mailed 23 October 2002, the Examiner objected to the drawings as failing to comply with 37 CFR 1.84(p)(5); objected to the specification because of certain informalities (paragraphs 3 and 4 of the Office Action); objected to the incorporation by reference of a foreign reference; objected to claim 3 under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim; rejected claims 1-39 under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling; rejected claims 1-39 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention; rejected claims 1-15, 18-26, 29-34, and 36-39 under 35 U.S.C. 102(e) as being anticipated by USPN 6,090,481 to Depauw et al. (hereinafter referred to as Depauw); and rejected claims 16-17, 27-28, and 35 under 35 U.S.C. 103(a) as being unpatentable over Depauw.

In response to the Examiner's objection to the drawings, Applicants are providing the enclosed Figure 1, in which the reference character 14 is included. This reference character 14 refers to the substrate surface and was not shown in the pending Figure 1. Applicants thank Examiner Piziali for his attention to this omission.

In response to the Examiner's objections to the specification due to certain informalities (paragraphs 3 and 4 of the Office Action), Applicants are making amendments to correct the noted informalities. On page 1, line 11, Applicants are replacing "with•temperable" with "with temperable". On page 3, line 6, Applicants are replacing "unsalable" with "impossible to sell". Applicants thank Examiner Piziali for his attention to these informalities.

In response to the Examiner's objection to the incorporation by reference of a foreign reference, Applicants are making an amendment to incorporate the same material by reference to U.S. Patent No. 6,060,178, which is equivalent to the foreign reference that was originally incorporated by reference. Thus, Applicants have replaced "PCT International Publication No. WO 97/48649" with "U.S. Patent No. 6,060,178". The material now incorporated by reference to U.S. Patent No. 6,060,178 is the same material that was originally incorporated by reference to PCT International Publication No. WO 97/48649. Thus, no new matter is being incorporated into the present application by this replacement.

With respect to the Examiner's objection to claim 3 under 37 CFR 1.75(c), the present Amendment cancels claim 3 and therefore this objection is rendered moot.

In response to the Examiner's rejection of claims 1-39 under 35 U.S.C. 112, first paragraph, based on a disclosure which is not enabling, Applicants are amending the claims to specify that the claimed coating is "on" a substrate. Applicants believe this addresses the enablement rejection.

The Examiner has rejected claims 1-39 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The indefiniteness rejections noted in paragraphs 9-12 of the Office Action will now be addressed in turn.

With respect to the Examiner's indefiniteness rejection of claim 7, the present Amendment deletes "30" from this claim. This appears to have been a typographical error and Applicants thank Examiner Piziali for his attention to this error.

With respect to the Examiner's indefiniteness rejection of claims 11 and 22, these claims are being amended to replace "silver" with "infrared reflective", thus providing antecedent basis.

With respect to the Examiner's indefiniteness rejection of claims 12-22, independent claim 12 (from which dependent claims 13-22 depend) has been amended to replace "1100%" with "110%", thus rendering claims 12-22 definite. Applicants thank Examiner Piziali for noting this error.

Finally, the Examiner has rejected claims 1-39 as being indefinite, stating that the claims set forth specific characteristics (haze-resistant and temperable) without setting forth specific compositions which would meet such characteristics. Applicants respectfully disagree with this rejection and believe the pending claims include definite features that facilitate haze resistance and temperability. In the present Amendment, Applicants have amended the claims to require that the intermediate dielectric stack includes alternating layers of a first, polycrystalline dielectric and a second substantially amorphous dielectric. These features provide exceptional haze resistance and temperability. Applicants respectfully request withdrawal of the present indefiniteness rejection.

The Examiner has rejected claims 1-15, 18-26, 29-34, and 36-39 under 35 U.S.C. 102(e) as being anticipated by USPN 6,090,481 to Depauw et al. The Examiner has also rejected claims 16-17, 27-28, and 35 under 35 U.S.C. 103(a) as being unpatentable over Depauw. In response, Applicants respectfully traverse these rejections and request reconsideration by the Examiner in view of the previously submitted amendments and/or the following remarks.

The present Amendment specifies that the intermediate dielectric stack comprises alternating layers of a first, polycrystalline dielectric and a second, substantially amorphous dielectric and that the intermediate dielectric stack comprises at least three intermediate dielectric layers. These features provide exceptional resistance to tempering problems, such as haze formation. Temperable coatings must be able to withstand elevated temperatures at or near the melting point of glass. Many low-emissivity film stacks are not intended to be tempered and simply cannot withstand the elevated temperatures associated with tempering. Tempering such a coating tends to adversely affect the integrity of the coating, such that its intended optical and thermal insulating properties are lost or greatly reduced. Extensive effort goes into designing film stacks that can be tempered without developing objectionable properties, such as haze.

Depauw teaches a low-emissivity film stack that achieves a particular combination of properties when incorporated into laminated glass. For example, Depauw seeks the particular combination of high visible transmission, low energy transmission, and particular color (see e.g., col. 4, lines 27-31). To achieve these properties in laminated glass, Depauw teaches a film stack “in which the coating layers are formed from specific materials within specific thickness limits and with specific ratios in the respective thicknesses of certain layers” (col. 5, lines 21-24).

Depauw focuses in particular on the optical properties of a coating with the following structure: non-absorbent transparent dielectric 1/metal 1/non-absorbent transparent dielectric 2/metal 2/non-absorbent transparent dielectric 3. Depauw gives a general teaching of the dielectric materials that are commonly used for the antireflective layers in low-emissivity film stacks (col. 5, lines 31-40). Depauw also gives a general teaching that non-absorbent transparent dielectric 1, non-absorbent transparent dielectric 2, and non-absorbent transparent dielectric 3 can each

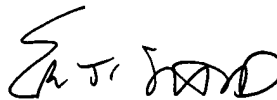
comprise multiple transparent dielectric films formed of different materials. General teachings of this nature are well known in the present art.

There is no recognition anywhere in Depauw of the haze formation problem that must be overcome in producing temperable coatings. Depauw fails to appreciate the benefit of providing alternating intermediate layers of crystalline and amorphous dielectrics. In fact, Depauw states that special care must be taken if the coatings are applied to glass before bending at elevated temperature, and that such care may include changing the coating composition or structure to make sure the coating can withstand the bending process (col. 4, lines 61-67). Depauw fails to indicate what changes should be made to their coatings to render them capable of withstanding such elevated temperature processing. Thus, Applicants submit that the claimed haze-resistant, temperable film stacks comprising alternating intermediate layers of crystalline and amorphous materials are neither anticipated by, nor obvious over, the teachings of Depauw.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested. Examiner Piziali is invited to contact the undersigned to discuss this application.

Respectfully submitted,

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